No. 754,860. PATENTED MAR. 15, 1904.

W. FEHR & J. KAUFMANN.

HEDDLE BAR FASTENING.

APPLICATION FILED JUNE 22, 1903.

NO MODEL.

FIG. 1.

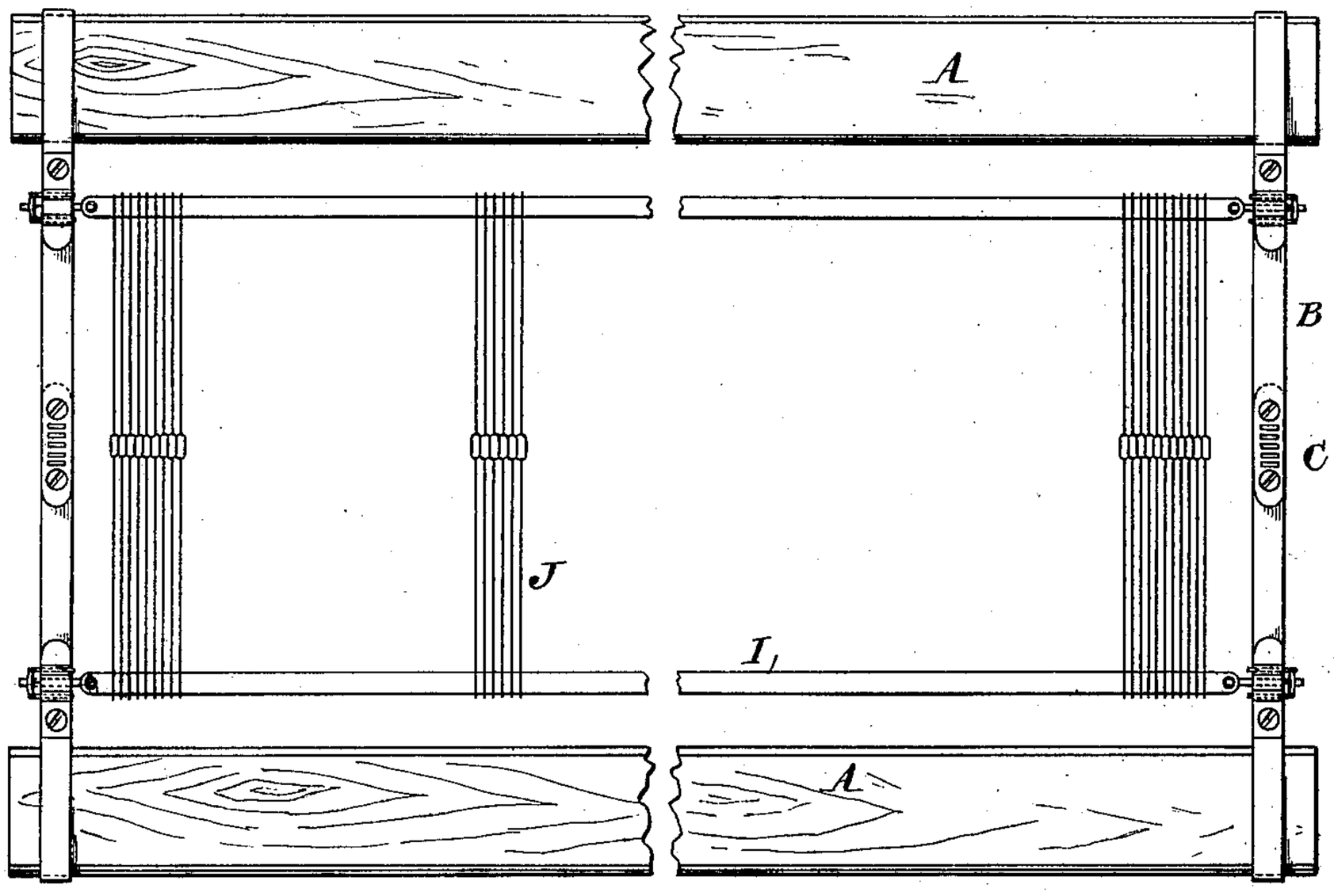

FIG. 4.

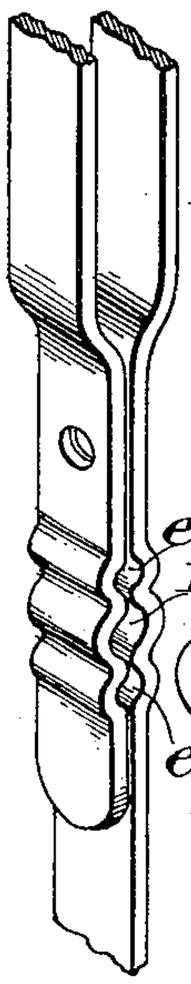

FIG. 6.

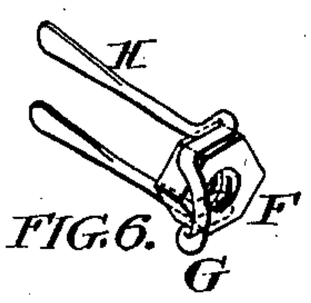

FIG. 7.

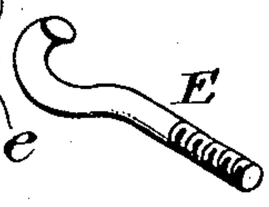

FIG. 2.

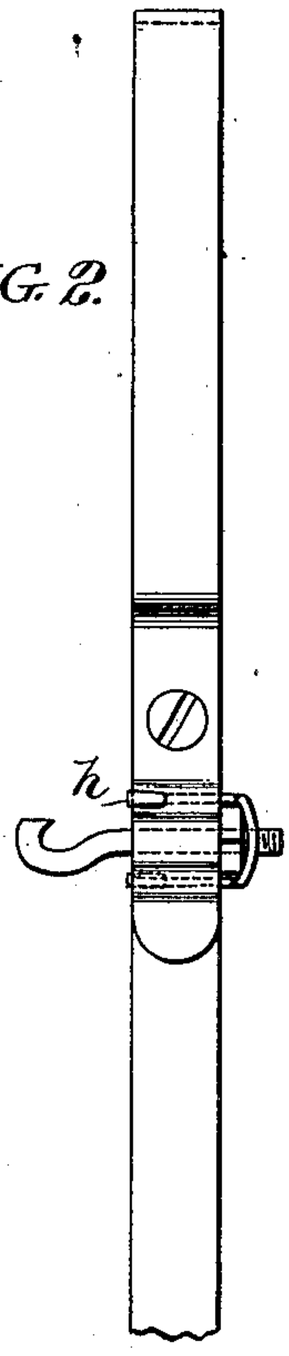

FIG. 3.

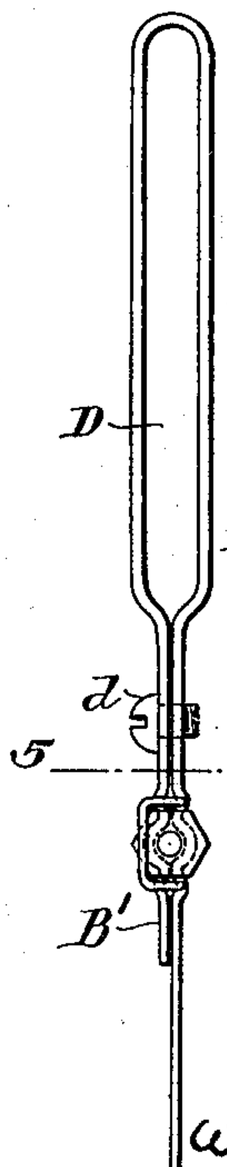

FIG. 5.

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No. 754,860. Patented March 15, 1904.

UNITED STATES PATENT OFFICE.

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HEDDLE-BAR FASTENING.

SPECIFICATION forming part of Letters Patent No. 754,860, dated March 15, 1904.

Application filed June 22, 1903. Serial No. 162,521. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM FEHR and JACOB KAUFMANN, of the city and county of Philadelphia, State of Pennsylvania, have invented an Improvement in Heddle-Bar Fastenings, of which the following is a specification.

Our invention has reference to heddle-frames for looms; and it consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

The object of our invention is to provide a simple, effective, and inexpensive construction of locking device for the tightening-hooks of a frame structure such as shown in Letters Patent No. 726,417 of 1903.

In carrying out our invention we connect the upper and lower bars by end bars consisting of looped straps formed with bent portions through which hooked tension-screws may be passed and having means for receiving and holding a locking device. Connected with the tension-screws are upper and lower horizontal rods of usual construction which are held in stretched condition and which rods carry the ordinary heddle-wires, as shown in the patent referred to above. The tension-screws have their nuts combined with locking devices which hold them from turning, the said locking devices consisting of bent wire portions adapted to extend through the end frames or strap portions and having their free ends bent so as to hold the locking device in position and against displacement during the jarring of the loom-frame.

Our invention also comprehends details of construction which, together with the above features, will be better understood by reference to the drawings, in which—

Figure 1 is a front elevation of the heddle embodying our improvements. Fig. 2 is an enlarged elevation of one of the straps. Fig. 3 is an end elevation of the same. Fig. 4 is a perspective view of a portion of the strap. Fig. 5 is a cross-section on line 5 5 of Fig. 3. Fig. 6 is a perspective view of the adjusting-nut and locking device, and Fig. 7 is a perspective view of the adjustable hook.

A A are two horizontal frames of wood or other material. These frames are connected at each end by vertical metal frames B, consisting of flat metal bent into strap form. As shown, two such metal straps are secured together at C and their free ends are looped, as at D, to receive the bars A and the ends B′, secured to the body portion of the bands by screws *d*. These end bars B at points adjacent to the upper and lower bars A A are transversely grooved, so as to form apertures *e e*. Through the middle aperture the shank of the hook E is passed and held in place by screwing the nut F upon it. By means of the nut the hook can be adjusted as required, and the nut is held against unscrewing by means of a locking device G, consisting of a piece of wire bent to fit upon the nut and provided with two parallel shanks H, adapted to fit into the apertures or holes *e e* of the end frames, and thereby lock the nut against turning. After the adjustment is made the free ends of the shanks H of the locking device are bent over the edge of the end frame, as shown in Figs. 2 and 5, to hold the locking device in position and incidentally to hold the hook against longitudinal adjustment.

Bars I I are arranged between the hooks E on opposite sides of the heddle and are locked upon said hooks, as shown in Fig. 1, so as to be maintained in a stretched condition. Supported between the bars I I are the heddle-wires containing the eyes for the warp-threads. A few of these wires are shown in Fig. 1, while in practice they extend over the entire length of the heddle-frame.

While we prefer the construction shown, the details may be modified without departing from the spirit of the invention.

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A heddle consisting of upper and lower bars combined with end frames formed of flat metal looped over the upper and lower bars and formed in bends or creases creating two

or more transverse apertures, adjusting-hooks having their shanks extend through a portion of said apertures, horizontal bars connected at each end with the hooks of opposite end frames, heddle-wires or warp-guiding devices carried by said last-mentioned bars, adjusting-nuts for the shanks of the hooks, and locking devices for locking the nuts against rotation held in the transverse apertures of the end frames not occupied by the hook-shanks.

2. A heddle consisting of upper and lower bars combined with end frames formed of flat metal looped over the upper and lower bars and formed in bends or creases creating two or more transverse apertures, adjusting-hooks having their shanks extend through a portion of said apertures, horizontal bars connected at each end with the hooks of opposite end frames, heddle-wires or warp-guiding devices carried by said last-mentioned bars, adjusting-nuts for the shanks of the hooks, locking devices for locking the nuts against rotation each consisting of a bent-wire clip fitting the nut and provided with two shanks extending through the transverse apertures in the end frames and by which the locking device is held against rotation.

3. A heddle consisting of upper and lower bars combined with end frames of flat metal looped over the upper and lower bars and formed in bends or creases creating two or more transverse apertures, adjusting-hooks having their shanks extend through a portion of said apertures, horizontal bars connected at each end with the hooks of opposite end frames, heddle-wires or warp-guiding devices carried by said last-mentioned bars, adjusting-nuts for the shanks of the hooks, locking devices for locking the nuts against rotation each consisting of a bent-wire clip fitting the nut and provided with two shanks extending through the transverse apertures in the end frames and by which the locking device is held against rotation and further having the ends of the shanks bent over the end frames so as to hold the locking device in position and the hooks against longitudinal movement.

4. In a heddle, the combination of the end frames formed with transverse openings, adjustable hooks carried by the end frames adjacent to said transverse openings, horizontal bars for the heddle-wires carried by said hooks, adjusting-nuts carried by the shanks of the hooks, and locking-clips engaging said nuts and having shanks extending through the transverse openings in the end frames.

5. In a heddle, the combination of the end frames formed with transverse openings, adjustable hooks carried by the end frames adjacent to said transverse openings, horizontal bars for the heddle-wires carried by said hooks, adjusting-nuts carried by the shanks of the hooks, and locking-clips engaging said nuts and having shanks extending through the transverse openings in the end frames, and bent over on the inner side to secure said clips in locking engagement with the nuts.

In testimony of which invention we have hereunto set our hands.

WILLIAM FEHR.
JACOB KAUFMANN.

Witnesses as to signature of William Fehr:
R. M. KELLY,
WM. ROONEY.

Witnesses as to signature of Jacob Kaufmann:
ERNEST HOWARD HUNTER,
J. S. PHILLIPS.